

Claims

What we claim is:

1. A method of manufacturing cylindrical polyalkylene embedded silane-modified-CPG devices; comprising mixing a polyalkylene with a silane-modified CPG; filling the cylindrical wells of an aluminum plate with the said mixture; heating the said plate at 180°C to 220°C for a predetermined schedule; and upon cooling, releasing from the said plate the said embedded devices.
2. The method according to claim 1, in which the said polyalkylene is selected from the group consisting of ultrahigh molecular weight polyethylene, high density polyethylene, low density polyethylene, polypropylene, and mixtures thereof.
3. The method according to claim 1, in which the quantity of the said polyalkylene is preferably from 50 to 70% by weight, based on the total weight of the resin mixture.
4. The method according to claim 1, in which silane-modified-CPG are controlled porous glass beads which have been modified with aminoalkyltrialkoxysilane, [alkylamino]alkyl(trialkoxy)silane or mercaptoalkyl(trialkoxy)silane and mixtures thereof.
5. A compound of claim 4, wherein alkyl is selected from the group consisting of methyl, ethyl and propyl and wherein alkoxy is selected from the group consisting of methoxy, ethoxy and propoxy.
6. The method according to claim 1, wherein the said embedded devices contain less than ten micromoles of reactive amino or mercapto moieties.

7. The method according to claim 1, wherein the said aluminum plate is drilled with 50 to 5000 cylindrical wells.
8. A reusable Teflon synthesis plate drilled with 96 or 384 open top and bottom ends chambers to be used as holders of said embedded device of claim 1 in the automated synthesis of nucleic acids.
9. The method according to claim 8, wherein the said chambers are made consecutively of a top cylinder, a middle cylinder and a bottom cone.
10. The method according to claim 9, wherein the bottom cone has a cross diameter smaller than the said embedded device of claim 1.
11. The method according to claim 9, wherein the top cylinder and the middle cylinder have a cross diameter wider than the said embedded device of claim 1.
12. The method according to claim 9 and 11, wherein the top cylinder is wider than the middle cylinder.
13. A frit insertor tool to insert embedded devices of claim 1 into the bottom cones of claim 9 and 10.
14. The method according to claim 13, wherein the said frit insertor is made of 1 to 96 pins thereby inserting one to 96 said embedded devices into 1 to 96 said bottom cones
15. A frit extractor tool to extract embedded devices of claim 1 from the bottom cone of claim 9 and 10.
16. The method according to claim 15, wherein a frit extractor is made of 1 to 96 pins thereby extracting one to 96 said embedded devices from a synthesis plate.

17. A single synthesis column with open top and bottom end, wherein the cylinder holding the embedded device of claim 1 has a cross diameter smaller than the said device.
18. The method wherein a short gas surpressure is required to drive entry of chemical reagents into the said embedded device of claim 1 which has been secured into the said bottom cone of claim 9 and 10 or into the said holding cylinder of claim 17.
19. The method wherein the said embedded device of claim 1 which has been secured into the said bottom cone of claim 9 and 10 or into the said holding cylinder of claim 17, retains chemical reagents until a long gas surpressure is applied to drain the said reagents.
20. The method according to claim 18 and 19, wherein the said long gas surpressure lasts three to eight times longer than the said short gas surpressure.